2005 Directory of Services



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Mission

The Bureau of Forensic Toxicology (BFT) of the Utah Public Health Laboratories will be foremost in the provision of quality forensic toxicology services to the Office of Medical Examiner and law enforcement agencies in Utah.

Overview

The Bureau of Forensic Toxicology performs qualitative and quantitative chemical analyses of tissues and body fluids to determine the presence of drugs and other toxic substances. Samples are submitted to the laboratory by the Office of the Medical Examiner (OME) and by law enforcement agencies statewide.

Toxicology results are used to:

- assist the OME in determining cause and manner of death (per <u>Utah Code Section 26-4-7</u>); and
- provide information in cases involving suspects driving under the influence (DUI) of alcohol and/or drugs (per <u>Utah Code</u> <u>Section 41-6a-502</u>) or automobile homicides (per <u>Utah Code</u> <u>Section 76-5-207</u>)

The Bureau of Forensic Toxicology staff is comprised of 2 laboratory technicians/clerical support, 2 chemists, 6 toxicologists, and 2 management personnel. Toxicology staff provide technical consultation, expert opinion, deposition, and court testimony to support and provide interpretation of our test results. We provide these services to the Office of the Medical Examiner and to the criminal justice community.

Quality Assurance Statement

The UPHL Bureau of Forensic Toxicology is committed to providing quality services to our clients. To accomplish this, a quality system has been established to provide the criminal justice community with the continuing confidence that laboratory results are and remain accurate, impartial, and relevant.

The following objectives of the quality system are supported and understood by the management and staff of the UPHL Bureau of Forensic Toxicology:

- To provide sound technical methods and procedures utilizing appropriate instruments and equipment;
- To provide results that are accurate, valid, defensible, and pertinent to the needs of the criminal justice community;
- To provide relevant, professional, and impartial testimony in judicial proceedings;
- To provide continuing education and support to all analysts through a professional development program;
- To demonstrate through documentation that the quality control procedures are being conducted; and
- To provide a foundation for pursuing the requirements of laboratory accreditation.

Specimen Submission Requirements

The BFT Laboratory may reject specimens if the submitting agency fails to include a completed DUI Toxicology Laboratory Analysis Request Form or does not meet all requirements for specimen submission. Leaky containers will NOT be accepted for analysis.

Specimen Collection

The BFT will supply blood and urine collection kits to law enforcement agencies upon request. For more information on the specimen collection kits, see <u>Appendix A</u>.

Each law enforcement agency is responsible for providing trained phlebotomists/technicians to collect specimens in accordance with universal safety precautions. Guidelines for forensic specimen collection are included in Appendix B.

Minimum Specimen Volume Requirements For Testing			
Blood alcohol	5 ml (one 10 ml gray top tube)		
Blood drug screen	20 ml (two 10 ml gray top tubes)		
Urine drug screen	30 ml (one 90 ml plastic bottle)		

Specimen Information

Using water-resistant ink, each specimen container must be individually labeled with the following information:

Name of the subject Date and time specimen was obtained Name of person that collected the specimen Witnessing officer's initials

A tamper-resistant seal must be placed across the stopper or cap of the specimen container; the person sealing the specimen container must initial the seal. Identification labels for blood tubes must NOT be used to seal the tube.

The DUI Toxicology Analysis Request Form (<u>Appendix C</u>) must be completed and included with the specimen. Ensure that the V 2.0

chain of custody section is completed. For specimens submitted by mail, the chain of custody must be completed as illustrated in the following example:

CHAIN OF CUSTODY			
From	То	Date	Time
* Name: Mark Jones * Agency: Wasatch Front PD Title: Officer	* Name: US mail * Agency: N/A Title: N/A	1/1/2005	10:00

It is helpful to provide background information such as breath alcohol test results, offense, history of drugs or medications, etc. Please limit analysis requests to suspected drugs or drug categories. Unnecessary additional requests are costly and prevent the laboratory from reporting case results in a timely manner.

Specimen Preservation

Gray top blood collection tubes contain both a preservative (100 mg sodium fluoride) and an anticoagulant (20 mg potassium oxalate). The preservative helps prevent deterioration of the specimen, including changes in alcohol concentration and the breakdown of cocaine. The anticoagulant prevents the sample from clotting.

Samples must be kept secure and refrigerated until shipped or delivered to the laboratory.

Specimen Shipment

Mailed specimens must meet blood borne pathogen shipping requirements and be packaged to fully contain leakage/spillage in accordance with applicable federal laws (PHS 42 CFR Part 72, rule 173.199). These measures are necessary to protect agency personnel, postal/delivery personnel, and Utah Public Health Laboratories staff from exposure to disease in the event that the specimen tubes leak or break in transit. Do <u>NOT</u> ship needles or other blood collection equipment to the laboratory.

Inner Container

Each sealed and labeled blood specimen tube must be placed in the cushioned receptacles provided in the blood collection kit. Polyethylene urine containers must be placed in the sealable plastic pouches provided in the urine collection kits. The inner container must contain sufficient absorbent material to absorb the entire liquid contents of the collection tube/container in the event of breakage/leaking during transit.

Outer Shipping Box

Each container is to be placed in a crush-proof shipping container made of fiberboard or Styrofoam. The outer container must be sealed, labeled, and biohazard labels must be affixed to the exterior.

Specimen Storage and Disposal

Specimens are stored in the laboratory's evidence refrigerator until they are returned to the submitting agency by UPS or destroyed

Specimens are routinely retained for 3 weeks after the final report is issued. Should an agency require additional testing, the request must be made during this 3-week time period. After this 3-week time period, the laboratory will send agencies a fax notification of specimens ready to be returned or destroyed. Unless the laboratory is contacted, the specimens will be discarded/destroyed 5 weeks after the final report is issued.

Specimen Storage and Disposal Schedule			
Time Frame	Action		
Report is issued	Specimens are stored in evidence refrigerator		
1-3 weeks after report is issued	Any additional tests must be requested during this time period.		
3 weeks after report issued	Agency will receive a fax notification of specimens ready to be returned or destroyed		
5 weeks after report issued	Any remaining specimens will be destroyed.		

Analytical Results

The BFT laboratory provides analytical results to the submitting law enforcement officer or prosecuting attorney via U. S. Postal Service and/or fax. When requested, screening results may be provided to the Division of Driver License or the submitting agency. Note that preliminary reports provide only presumptive results and drugs may not be confirmed upon further testing.

Blood

With the exception of alcohol, drug levels in blood provide limited information in assessing the degree of impairment in DUI cases. There is insufficient scientific data relating the blood levels of many drugs to the degree of impairment. BFT staff provide testimony about a drug's physiological effects and whether those effects are consistent with the officer's observations and the results of the suspect's field sobriety tests.

Urine

Drug presence in urine samples serves only to establish history of use. Due to the variability of absorption, distribution, metabolism, excretion, and elimination of drugs between individuals, no correlation can be made between the presence of a drug in the urine and levels of that drug in blood. Furthermore, presence of a drug in the urine cannot be related to the degree of impairment.

Analysis Methods

Analysis Methods Employed in the BFT Laboratory		
ELISA	Enzyme Linked Immunosorbent Assay	
GC/FID	Gas Chromatography/Flame Ionization Detector	
GC/NPD	Gas Chromatography/Nitrogen Phosphorus Detector	
GC/MS	Gas Chromatography/Mass Spectrometer	
HS/GC	Headspace Gas Chromatography	

For more information on these methods, visit the BFT website.

Testing Panels

Volatiles Panel			
Method: HS/GC			
Panel	Drugs	Cut off value ¹ (grams/100ml or %)	
		Blood	Urine
Volatiles	Ethyl Alcohol	0.01	0.01

Unless extenuating circumstances are indicated on the DUI Toxicology Laboratory Analysis Request Form, no further testing is conducted on specimens resulting in blood ethanol ≥ 0.10 grams/100ml.

Drugs of Abuse Panel			
Method: ELISA, GC/MS			
Panel	Drugs	Cut of	mation If value (ml) ²
		Blood	Urine
	Amphetamine		
	Methamphetamine		
Amphetamines	MDMA/MDA	0.05	Conf. ³
	Phentermine		
	Ephedrine/Pseudoephedrine		
Cannabinoids	THC	0.001	N/A ⁴
(Marijuana)	THC-COOH (metabolite)	0.005	Conf.
Cocaine	Cocaine	0.03 Conf.	
Cocame	Benzoylecgonine (metabolite)	0.03	Con.
Opiates	Morphine	0.05	Conf.

The <u>confirmation procedures</u> for prescription drugs identify but are not limited to the following drugs:

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¹ The cut-off values are subject to change without notice.

² μg/ml refers to micrograms per milliliter

³ Confirmation of drugs in urine is a GC/MS verification of drugs identified in the initial urine drug screen.

 $^{^4}$ THC is not found in urine; only THC-COOH metabolite is found in urine. V 2.0

Prescription Drugs Panel			
Method: GC/NPD, GC/MS			
Panel	Drugs	Confirmation Cut off value (µg/ml)	
		Blood	Urine
Sedative Hypnotics	Butalbital Carbamazepine Carisoprodol Meprobamate Pentobarbital Phenobarbital Phenytoin Secobarbital	2	Conf.
Tranquilizers	Diazepam Lorazepam Nordiazepam Chlordiazepoxide Temazepam Zolpidem Alprazolam	0.05	Conf.
Antidepressants	Amitriptyline Desipramine Imipramine Nortriptyline Trazodone	0.05	Conf.
Narcotic Analgesics	Codeine Desmethyltramadol Meperidine Methadone Normeperidine Oxycodone Tramadol Hydrocodone	0.05	Conf.
Alkaloids and Amines	Chlorpheniramine Cyclobenzaprine Diphenhydramine Doxylamine Promethazine	0.05	Conf.

The BFT services are subject to change depending on resources and/or changing drug patterns within the state.

Reference Laboratories

For compounds for which the BFT Laboratory does not conduct testing, specimens may be sent to a reference laboratory at the request of the submitting agency. When requesting reference laboratory testing, please provide a PO number to cover the cost of analysis and shipping and handling.

Laboratory Service	Laboratory (see Appendix D for contact information)
Child endangerment investigations	ATI NMS NWT
Pre-employment and workplace drug testing	ChemaTox LabCorp NWT PTL
Prescription or other drugs (Clinical Toxicology)	ARUP NMS
Sexual Assault and Date Rape investigations Support of possession by consumption charges	NMS NWT NMS NWT
Urine drug testing for parole and probation violations	Chematox NWT

Appendix A: Specimen Collection Kits

Blood collection kits include:

- 2 gray top blood tubes with adhesive labels
- 1 needle
- 1 needle holder
- consent form cards
- a Povidone-Iodine prep pad
- absorbent material
- evidence tape (for sealing)
- a sealable inner container with labels for chain of custody
- a crush-proof shipping container

Urine collection kits include:

- One urine collection cup
- One 90-ml plastic specimen container
- Adhesive label and seal
- a plastic sealable pouch
- absorbent material
- a crush-proof shipping container

Upon request, contractors who perform specimen collection for agencies along the Wasatch Front will be provided with bulk collection kits. Bulk blood collection kits include gray top blood tubes, needles, and evidence tape.

The BFT does <u>NOT</u> supply the following:

- Tourniquets, gloves, gauze, bandages
- soap and water solution used to disinfect the venipuncture site.
- a container for mailing or delivering samples collected using bulk supplies
- a preservation or security protocol to be applied on samples prior to being submitted to the laboratory
- a sharps container for proper disposal of needles.

Appendix B: Guidelines for Forensic Specimen Collection

Proper blood collection techniques should be followed to minimize health risk to subject and collector. Gloves should be worn at all times during the collection process. Venipuncture collection must be observed by the police officer.

- 1. Identify the subject correctly and obtain consent.
- 2. Apply the tourniquet 3-4 inches above the selected puncture site. Do not place too tightly or leave on more than 2 minutes.
- 3. Choose a collection site. The most common sites are the veins in the antecubital space of the arms.
- 4. Use Povidone-Iodine prep pad to cleanse skin at collection site. If prep pad is unavailable, cleanse skin with gauze and a soap/water solution. When making the soap/water solution, use a soap that does not contain any alcohol.
- 5. Draw blood with vacutainer needle. To prevent loss of alcohol, the collection tube should be filled, if possible, to a level that minimizes the air space above the specimen.
- 6. Add sample to gray top blood tube by vacutainer method. Do not remove stoppers.
- 7. To insure proper mixing of the anticoagulants, slowly invert the tubes completely at least five times. Do not shake vigorously.
- 8. Apply a sterile bandage to the site.
- 9. Label specimen tubes and obtain officer's initials on the tube(s).
- 10. Place an evidence seal across the top the tube and initial.
- 11. Properly dispose of needle, needle holder, and gauze. Do not discard in an area where these items could contaminate unused blood collection equipment. Do not ship needles or needle holder with the specimen.
- 12. Under the officer's direction, complete the DUI Toxicology Analysis Request Form.
- 13. Prepare the specimens for submission per BFT instructions.

Appendix C: DUI Toxicology Analysis Request Form

	hone: (801) 584-8 kx: (801) 584-8 -mail forensictor (
ONE SUBJECT PER REQUEST FORM, PLEASE PRIN	T. ALL FIELDS M	ARKED WITH * MUST BE COMPLETED.		
* Subject	Middle Inmal	* Analysis Rec	uested By	
Date of BURK (MM/ DD/11)	sere are Initial	* A gency (Do not Abbroids)	*Agency Case #	
•				
Driver's License #	* State	* Address	Cay	
Faw I.D.		*Z\$\psi\$ Phone		
* Specimen(s) Collected	FT Use Only	* A I '- D		
Blood # samples 1 2 3	ed Date:	* Analysis R	equestea	
Urine #samples 1 2 3		☐ Alcohol ☐ Drugs of Abuse (THC, Cocaine, Mo	arkina Mashamahat	
Fine results may be of limited value		☐ Selected Prescription Drugs (see		
Total # of samples 1 2 3 4		Unless otherwise requested, analyses are pe justifying the charged offense.	rformed up to the po	int of
		List suspected drugs and/or sympto	ms ay bibitad	
Offense:		not suspected drugs and of sympto	ins extraoreer.	
DUI DUI Metabolite • *Other (specify *(please call for authorization before st	y); ubmitting samples)			
Breath alcohol test:				
not done done, result =				
☐ not done ☐ done, result = Tield Sobriety tests: ☐ passed ☐ failed ☐ inconclusive ☐ not do	one	For drug analysis not performed or provide be referred to other labor atories at the law	ed by the BFT lab, the enforcement agency's	e analysis o expense.
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Copies of this form may be downloaded from the <u>BFT Laboratory</u> <u>website</u>.

Appendix D: Reference Laboratories Contact Information

Laboratory	Contact Information		
ARUP	Associated Regional and University Pathologists, Inc.		
	500 Chipeta Way		
	Salt Lake City, Utah 84108		
	(800) 242-2787		
	www.aruplab.com		
Chematox	ChemaTox Laboratory, Inc.		
	(800) 334-1685		
	www.chematox.com		
	Boulder office:	Durango Office:	
	5401 Western Ave.	146 Sawyer Drive	
	Boulder, CO 80301	Durango, CO 81303	
	303-440-4500	970-247-4504	
LabCorp	LabCorp		
	1250 E 3900 S #302		
	Salt Lake City, Utah 84124		
	(801) 264-9675		
) n (G	www.labcorp.com		
NMS	National Medical Services		
	3701 Welch Road		
	Willow Grove , PA 19090		
	(215) 657-4900		
	(800) 522-6671		
NIXI/T	www.nmslab.com		
NWT	Northwest Toxicology		
	Hayes Building, Unit C 2282 South Presidents Drive		
	West Valley City, UT 84120)	
	(801) 293-2300		
PTL	www.nwtox.com Pacific Toxicology Laboratories		
	6160 Variel Ave.	nies	
	Woodland Hills, CA 91367 (800) 328-6942		
	www.pactox.com		
	www.pactox.com		